

I claim:

1. A rubber dam comprising a sheet of elastomeric material, an operative insert engaged to the sheet of elastomeric material and an integrally attached exterior frame.
- 5 2. A rubber dam as defined in claim 1, wherein the operative insert and integral frame are molded within in the elastomeric material.
3. A rubber dam of claim 1, wherein the operative insert and integral frame are attached to
10 the outside surface of the elastomeric material
4. A rubber dam of claim 1, wherein the operative insert and integral frame are imbedded within or attached to the rubber dam membrane but are not integrally attached to one another
- 15 5. A rubber dam of claim 1, wherein the operative insert and integral frame are imbedded within or attached to the rubber dam membrane and are also integrally attached to each other
6. A rubber dam as defined in claim 1, wherein the operative insert is elastomeric.
- 20 7. A rubber dam as defined in claim 1, wherein the operative insert is malleable to a plurality of adjusted, three-dimensional shapes.
8. A rubber dam as defined in claim 1, wherein the operative insert is resilient within its elastic limit, but deformable beyond its yield point
- 25 9. A rubber dam as defined in claim 1, wherein the operative insert is substantially rigid
10. A rubber dam as defined in claim 7, wherein the operative insert comprises a material selected from the group comprising metal wire, metal stamping, die cast metal, die-cut metal, or
30 molded or otherwise formed memory-retaining plastics or composites.

11. A rubber dam as defined in claim 1, wherein the operative insert comprises a closed loop which divides the sheet into a region exteriorly of the operative insert and a region interiorly of the operative insert.
- 5 12. A rubber dam as described in claim 11, wherein the elastomeric material interiorly of the operative insert is a solid contiguous membrane.
13. A rubber dam as defined in claim 11, further comprising an opening in the elastomeric material inside the closed loop.
- 10 14. A rubber dam as defined in claim 11, wherein a mesh material encircles the periphery of the opening to provide a bonding surface for a barrier material to be secured to the rubber dam around the perimeter of the operating site of a medical procedure.
- 15 15. A rubber dam as defined in claim 11, wherein the elastomeric material encircles the periphery of the opening forming a flange extended inwardly of the operative insert.
16. A rubber dam as defined in claim 14, wherein an adhesive is applied to the flange.
- 20 17. A rubber dam comprising a sheet of elastomeric material in which is embedded a sheet of malleable material which may be readily adjustable by finger pressure to a plurality of retained three-dimensional shapes.
18. A rubber dam as defined in claim 17, wherein the sheet of malleable material is a
- 25 continuous sheet.
19. A rubber dam as defined in claim 17, wherein the sheet of malleable material is a discontinuous sheet.
- 30 20. A rubber dam as defined in claim 17, further comprising at least one opening in the malleable sheet for isolation of a site of a medical procedure.

21. A rubber dam, comprising an operative insert engaged to the sheet of elastomeric material which resists the transmission of tensile forces in the elastomeric material on a first side of the operative insert from being transmitted to the elastomeric material on an opposite side of the operative insert.
22. A rubber dam as defined in claim 21, wherein the operative insert is a closed loop.
23. A rubber dam as defined in claim 21, wherein the operative insert comprises one or more discontinuous elements that do not form a closed loop.
24. A rubber dam as defined in claim 7, wherein the elements of the dam and methods for use of the dam in isolating the field of a dental procedure in a single alveolar arch comprise:
- (a) a sheet of elastomeric material;
 - (b) an operative insert engaged to the sheet;
 - (c) an exterior integrally attached frame
 - (d) an opening in the elastomeric material through which the dental procedure will be performed; and
 - (e) wherein the operative element is malleable and deformed by hand manipulation to create, a lingual bow, a facial bow, and a pair of linking transverse arches which correspond to the anatomical contours adjacent the field and assists in positioning the opening around the field.
25. A rubber dam as defined in claim 1 for isolating the field of a dental procedure in the mouth of a patient having an upper dental ridge and a lower dental ridge, wherein elements of the operative insert span both the upper alveolar ridge and the lower alveolar ridge simultaneously, comprising:
- (a) reciprocally opposing labial bows
 - (b) reciprocally opposing lingual bows
 - (c) reciprocally opposing transverse arches
 - (d) reciprocally opposing diaphragmatic alveolar membranes

- (e) inter-occlusal linking elements linking all reciprocally opposing elements with respect to the inter-occlusal dimensions of the patient's opened mouth
- (f) an exterior frame integrally attached to the operative insert of the rubber dam

5

26. A rubber dam as defined in claim 25, wherein the operative insert is resilient or substantially rigid and is held in place at least partially by the reciprocal forces of the patient's musculature transmitted through the opposing alveolar arches.

10 27. A rubber dam as defined in claim 25, wherein the operative insert is malleable and is held in place at least partially by rubber dam clamps or retaining devices.

28. A rubber dam as defined in claim 1, wherein the integrally attached frame is composed of a material which is either malleable, resilient, or rigid.

15

29. A rubber dam as defined in claim 1 for isolating the field of a dental procedure, wherein the operative insert disperses the forces of the sheet adjacent to the operative insert, so as to limit stretching and tearing of the sheet

20 30. The rubber dam as defined in claim 1, wherein a dental clamp is used to assist in releasably retaining the rubber dam in position.

31. The rubber dam as defined in claim 1, wherein an adhesive is used to form a seal around the interface of the dam around the operating site, thereby eliminating or minimizing the seepage
25 of leaks and particulates at this interface.

32. A rubber dam as defined in claim 1, wherein projections emerge from the operative insert to the exterior of the elastomeric material to assist in releasably retaining the rubber dam in position.

30

33. a rubber dam of claim 32, wherein specialized projections allow the rubber dam to be sutured directly to soft tissues to secure the rubber dam in position in the mouth of a patient.

34 a rubber dam of claim 32, wherein the specialized projections allow specialized rubber dam retaining devices to be connected to releasably secure the rubber dam in position in the mouth.

35 a rubber dam of claim 25, wherein the inter-arch operative insert is attached to the barrier membrane and also directly to the exterior framework at a location which is generally symmetrical or in alignment with the midpoint of one or both horizontal frame elements

36 a rubber dam of claim 25, wherein the inter-arch operative insert is attached to the barrier membrane and also directly to the exterior framework at a location which is generally symmetrical or in alignment with the midpoint of one or both vertical side frame elements

37 a rubber dam of claim 25, wherein the inter-arch operative insert is attached to the barrier membrane generally and also directly attached at at least one location to the exterior framework at a location which is generally located obliquely between the midpoint of a horizontal and vertical element of the exterior frame.

38 the rubber dam of claim 25, wherein the inter-arch operative insert has an incomplete complement of circumferential elements for isolating an operating field

39. the rubber dam of claim 37, wherein at least one of the elements of the operative inserts is fused to the surrounding barrier membrane material of like composition

39 the rubber dam of claim 37, wherein all of the elements of the operative insert are fused to the surrounding barrier membrane of like material, creating a unitary dam

40 the rubber dam of claim 39, wherein the material composition of the unitary body of the dam may be malleable, resilient, rigid, or elastic

41. the rubber dams of claim 1, wherein the dams are manufactured as flat, two-dimensional embodiments

5 42 the rubber dams of claim 1, wherein the dams are manufactured as three-dimensional embodiments

43 the rubber dams of claim 1, wherein the dams may be configured for bilateral anterior isolation may either have a flat or concave interior membrane

10 44 the rubber dams of claim 42, wherein dams manufactured for bilateral posterior isolation have a concave interior membrane

45 the rubber dams of claim 1, wherein the dams may be manufactured for unilateral posterior arch isolation

15 46 the rubber dam of claim 1, wherein the rubber dam is a true rubber dam in which the exterior membrane covers and retracts the patient's lips in a complete 360 degree circumferential manner

20 47 the rubber dam of claim 1, wherein the rubber dam is an abbreviated intra-oral rubber dam device in which the exterior membrane covers and retracts the patient's lips in less than a complete 360 degree circumferential manner

25 48 a method of assembling a rubber dam with an operative insert and an integrally attached frame by attaching an operative insert which is a separate device to a rubber dam which already has an integral frame

49 a method of claim 48, wherein a operative insert which is a separate device is attached to the rubber dam with an adhesive applied to at least one surface of the insert

50 the method of claim 48, wherein a rubber dam membrane is stretched over the the insert device which is a separate device and allowed to rebound, thereby allowing the rubber dam to pressure seal the interface between the membrane and the device

5 51 The rubber dam as defined in claim 1, wherein the thickness of the elastomeric material is from about 0.004 inches to about 0.100 inches in thickness when used in dental applications

52The rubber dam as defined in claim 11, wherein the closed loop operative insert is bent with a pressure of between 0.12 pounds to 6.00 pounds of force

10 53a rubber dam of claim 25, wherein the integrally attached frame which retracts the cheeks and lips may be supplemented by utilizing a rubber dam frame which is a separate device

15 54 a rubber dam of claim 25, wherein a portion of the rubber dam frame is integrally attached to the barrier membrane while another portion of the frame is detached from the barrier membrane in order to allow manual stretching of the barrier material over rubber dam attachment nibs mounted on the detached portion of the frame

20 .